Section 5.1

Several tables in Section 5.1 show three panels, with the top panel showing the monthly distribution of A, "Baseline Conditions," and the middle panel showing the monthly distribution of B, "Scenario Conditions," with the bottom panel showing the monthly distribution of the scenario changes from the baseline. This third panel was labeled as (A–B) and should have been labeled as (B–A). This correction should be made to Tables 5.1-4, -6, -8, -9, -10, and -11.

1995 Water Quality Control Plan and D-1641

The State Water Board's 1995 WQCP (adopted May 1995(b)) and the State Water Board's ~~and Reclamation's~~ Final EIR for implementation (November 1999) incorporated several ~~elements~~ changes recommended by ~~of the~~ EPA, NOAA Fisheries, and USFWS to the ~~regulatory~~ objectives for salinity and endangered species protection. The changes from D-1485 regulatory limits for CVP and SWP Delta operations are substantial. The State Water Board implemented the 1995 WQCP with decision 1641 in March 2000. The new provisions for X2, export/inflow ratio, and the VAMP that are implemented in D-1641 will be described in the section on Delta water operations because these are the basis for the 2001 and 2020 baseline operations assumed in CALSIM.

California Water Resources

California's water supplies come from surface water and groundwater sources that vary in distribution and volume depending on the annual climatic conditions throughout the state. California's Mediterranean climate provides wet winters and dry summers throughout most of the state. Pacific storms bring rain and snow, typically from October through April. Average annual statewide precipitation is about 23 inches corresponding to a water volume of nearly 200 maf over California's land surface. About 60% of this precipitation is retained as soil moisture until returned to the atmosphere through evaporation from the soils and transpiration from trees and other vegetation. Some precipitation (5%) recharges the groundwater basins that underlie much of California's land surface. The remaining 35% represents the state's average annual runoff of about 70 maf. Less than half this runoff is diverted for M&I or agricultural water supplies. The other half of California's runoff water provides the streamflow and shallow groundwater that maintain diverse aquatic ecosystems in California's rivers, estuaries, and wetlands (California Department of Water Resources 1998a).

Because agricultural and M&I demands are highest during summer, there is an imbalance between when water supply is available in California and when most of it is needed. Another water supply imbalance is created by the differences in runoff and demand between northern and southern California. More than 70% of the runoff comes from northern California but more that 75% of M&I and agricultural demand is south of the Delta.

California water supply development includes many local water supply projects, the CVP, the SWP and the Corps reservoir projects. Because of the seasonal pattern of runoff, storage reservoirs are generally needed for effective development of surface supplies in California. Some of these surface supplies are now used for required environmental flows below reservoirs and as outflow from the Delta. All of the SWP and CVP upstream-of-the-Delta stored water that is appropriated for use in south-of-Delta export areas must pass through the Delta and the CVP or SWP Delta pumping plants. The following discussions of CVP

14a and I-14b include the annual flow volumes (taf) and the annual variation between the 2001 values and the 2020 values.

The CALSIM 2001 baseline annual flow volumes for the San Joaquin River at Vernalis ranged from a minimum of 833 taf to a maximum of 13,927 taf, with an average of 2,660 taf/yr (3,674 cfs). The CALSIM 2020 annual values ranged from 832 taf to 13,854 taf, with an average of 2,587 taf/yr (3,573 cfs). The average change was a decrease of 73 taf/yr. Some of this reduction can be attributed to the lower initial storage value for New Don Pedro Reservoir used in the 2020 CALSIM simulations. This represents a decrease of 2.7% of the long-term 2001 baseline value. The CALSIM 2020 annual values were changed by more than 5% of the annual baseline value in 9 years. Table I-14c shows the differences in Vernalis monthly flow (cfs) between the 2020 baseline and the 2001 baseline values.

Although there may be a considerable number of months with changes of more than 10% of the 2001 baseline monthly flow, and a few years with more than a 5% change from the 2001 baseline flow, the long-term CALSIM 2020 Vernalis flow was reduced by just 2% (adjusted for the different initial New Don Pedro storage value) from the CALSIM 2001 results.

The total inflow to the Delta, represented by the Freeport and Vernalis flows, is just 0.5% less than the 2001 baseline. This suggests that the 2020 CALSIM-simulated Delta inflow future no action conditions are similar to the 2001 CALSIM-simulated baseline existing conditions.

Water Transfers

The passage of the CVPIA in 1992 changed the operating rules of the CVP contractors to allow water transfers among users in prescribed situations. In 1996, the SWP negotiated the "Monterey Agreement" which changed the operating rules of the SWP to help facilitate~~allow~~ banking and limited water transfers among SWP contractors. These changes allow a limited water market within these projects.

The California Legislature passed several laws in the 1980s and 1990s making it easier to transfer water beyond the boundaries of historical water service areas. These laws are aimed at protecting water users who are not a party to the transfer and also protect fish and wildlife from being "injured" or "unreasonably affected" by the transfer. These laws developed an expedited process for the State Water Board to expand the water rights (i.e., place of use) of those conducting a short-term (i.e., 1-year) water transfer.

In recent years, extensive water transfers across the Delta have occurred. Almost 800 taf were purchased for transfer in 1991 as a part of DWR's Drought Water Bank, still the largest water transfer year of record. Beginning in 1995, California experienced a series of higher-than-normal runoff years, and the need for water transfers decreased substantially. In 2001 (a dry year) EWA transferred

Mountains through the Edmonston Pumping Plant (maximum capacity of 3,250 taf/yr). The Edmonston Pumping Plant therefore provides a limit for the SWP deliveries to southern California, since a maximum of 3.25 maf can be pumped. When operating all 14 units, the plant can pump 320 cfs per unit, or 4,480 cfs, each day of the year. One unit is normally held in reserve, so the maximum delivery over the Tehachapi Mountains to Southern California contractors is limited to about 3 maf. Delivery of the maximum Table A entitlements of 2.58 maf would require operating the Edmonston pumping units at about 85% of capacity.

The San Joaquin Valley agricultural contractors have a combined entitlement of about 1.2 maf (the Kern County Water Authority has an entitlement of 1 maf). The South Bay aqueduct has a total entitlement demand of 220 taf. The North Bay aqueduct supplies an entitlement demand of about 76 taf, but this is not pumped at the SWP Banks facility.

The highest annual delivery made by the SWP (through 2002) was about 3.5 maf in 2000 (California Department of Water Resources 2002b). As the SWP contractor requests for the full Table A amount increase with ~~population growth~~increasing demand, the need to use the SWP facilities at their full design capacity will also increase. The SDIP will increase the operating flexibility of the SWP Banks facility and allow a greater fraction of the SWP Table A entitlements to be delivered to SWP contractors (i.e., increased water supply reliability).

The SDIP is expected to make some improvements in SWP water supply reliability, without having any major impacts on the CVP or on local water supplies, including the water diversions that supply agricultural water needs in the south Delta. This water supply section presents information to document the magnitude of the expected improvement in water supply reliability (based on the CVP and SWP planning model CALSIM II results), and describe the potential effects of increased SWP pumping on CVP exports and local south Delta diversions.

Example of Central Valley Project and State Water Project Delivery Patterns for Water Year 1994

CVP and SWP Delta operations and deliveries for WY 1994 are shown to illustrate the actual daily patterns of CVP and SWP operations. WY 1994 is the last in the CALSIM hydrology sequence, but was prior to the 1995 WQCP and D-1641 that changed the Delta objectives substantially. The 1994 pumping and delivery patterns illustrate the typical variations that occur within each water year. WY 1994 was classified as a critical year, and the SWP allocations were 50% of Table A contract amounts. The CVP allocations were also quite limited for 1994.

CVP Tracy is unable to directly supply the CVP demands of about 3,300 taf/yr because the CVP demands occur predominantly in the summer irrigation season.

Table 5.1-4. CALSIM–Simulated Scenario A CVP Tracy Pumping Monthly Distribution, for 2001 and 2020 Conditions (cfs)

A. 2001 Baseline

Per-centile	Oct	Nov	Dec	Jan	Feb	Mar	Pre-VAMP 4/1–4/15	VAMP 4/16–4/30	VAMP 5/1–5/15	Post-VAMP 5/16–5/31	Jun	Jul	Aug	Sep	taf/yr
Min	1,616	800	351	691	641	800	800	800	800	800	800	800	868	1,410	
10	2,585	1,251	1,193	2,389	1,389	1,240	800	800	800	800	1,220	857	2,048	2,912	
20	2,998	2,431	2,889	2,999	2,877	1,865	800	800	800	800	1,734	2,571	3,718	4,275	
30	3,309	3,412	3,002	3,007	3,137	2,403	1,125	800	800	800	2,012	3,745	4,467	4,366	
40	3,914	4,217	3,212	3,026	3,679	2,772	1,500	800	800	800	2,339	4,536	4,505	4,448	
50	4,315	4,247	4,209	4,122	4,020	3,352	2,919	800	800	1,125	2,540	4,570	4,531	4,468	
60	4,344	4,250	4,221	4,222	4,224	3,685	3,564	1,125	800	1,500	2,852	4,577	4,535	4,470	
70	4,355	4,253	4,222	4,226	4,237	4,230	4,200	1,125	1,125	1,500	3,000	4,588	4,543	4,475	
80	4,365	4,256	4,224	4,228	4,245	4,274	4,544	1,500	1,500	2,692	3,000	4,600	4,553	4,481	
90	4,374	4,260	4,225	4,229	4,247	4,286	4,600	1,500	1,500	3,000	3,000	4,600	4,562	4,485	
Max	4,391	4,265	4,227	4,232	4,254	4,308	4,600	1,500	1,500	3,001	3,000	4,600	4,578	4,494	
Avg	3,781	3,541	3,415	3,504	3,479	3,088	2,737	1,019	1,011	1,507	2,365	3,790	4,021	4,183	2,312

B. 2001 Scenario A

Per-centile	Oct	Nov	Dec	Jan	Feb	Mar	Pre-VAMP 4/1–4/15	VAMP 4/16–4/30	VAMP 5/1–5/15	Post-VAMP 5/16–5/31	Jun	Jul	Aug	Sep	taf/yr
Min	1,566	800	184	596	641	800	800	800	800	800	800	800	800	1,397	
10	2,537	1,401	1,090	2,372	1,384	867	800	800	800	800	1,251	1,271	2,049	2,912	
20	3,005	2,345	2,690	2,991	2,670	1,930	800	800	800	800	1,762	2,553	3,541	3,991	
30	3,157	2,999	2,997	3,001	3,209	2,421	1,125	800	800	800	2,027	4,006	4,381	4,352	
40	3,556	3,941	3,007	3,010	3,641	2,870	1,500	800	800	800	2,338	4,539	4,497	4,417	
50	4,098	4,237	4,215	4,056	4,152	3,467	2,842	800	800	1,125	2,562	4,574	4,532	4,468	
60	4,368	4,258	4,222	4,222	4,229	4,217	3,564	1,125	800	1,500	2,923	4,600	4,557	4,482	
70	4,377	4,261	4,226	4,229	4,236	4,275	4,451	1,125	1,125	1,500	3,000	4,600	4,565	4,487	
80	4,391	4,265	4,226	4,231	4,249	4,292	4,544	1,500	1,500	2,692	3,000	4,600	4,578	4,494	
90	4,391	4,265	4,227	4,232	4,252	4,302	4,600	1,500	1,500	3,000	3,000	4,600	4,578	4,494	
Max	4,391	4,265	4,227	4,232	4,254	4,321	4,600	1,500	1,500	3,001	3,000	4,600	4,578	4,494	
Avg	3,718	3,456	3,389	3,470	3,476	3,156	2,748	1,019	1,011	1,509	2,385	3,827	4,010	4,140	2,304

C. 2001 Scenario A Changes (~~A—B~~B – A)

Per-centile	Oct	Nov	Dec	Jan	Feb	Mar	Pre-VAMP 4/1–4/15	VAMP 4/16–4/30	VAMP 5/1–5/15	Post-VAMP 5/16–5/31	Jun	Jul	Aug	Sep	taf/yr
Min	-50	0	-167	-95	0	0	0	0	0	0	0	0	-68	-13	
10	-48	150	-103	-17	-5	-373	0	0	0	0	31	414	1	0	
20	7	-86	-199	-8	-207	65	0	0	0	0	28	-18	-177	-284	
30	-152	-413	-5	-6	72	18	0	0	0	0	15	261	-86	-14	
40	-358	-276	-205	-16	-38	98	0	0	0	0	-1	3	-8	-31	
50	-217	-10	6	-66	132	115	-77	0	0	0	22	4	1	0	
60	24	8	1	0	5	532	0	0	0	0	71	23	22	12	
70	22	8	4	3	-1	45	251	0	0	0	0	12	22	12	
80	26	9	2	3	4	18	0	0	0	0	0	0	25	13	
90	17	5	2	3	5	16	0	0	0	0	0	0	16	9	
Max	0	0	0	0	0	13	0	0	0	0	0	0	0	0	
Avg	-63	-85	-26	-34	-3	68	10	0	0	2	20	37	-11	-43	-8

Table 5.1-4. Continued

D. 2020 Baseline

Per-centile	Oct	Nov	Dec	Jan	Feb	Mar	Pre-VAMP 4/1–4/15	VAMP 4/16–4/30	VAMP 5/1–5/15	Post-VAMP 5/16–5/31	Jun	Jul	Aug	Sep	taf/yr
Min	1,664	800	723	715	641	800	800	800	800	800	800	800	898	1,198	
10	2,401	1,333	1,353	2,183	1,417	1,194	800	800	800	800	1,179	1,244	2,345	2,867	
20	3,016	2,233	2,755	2,998	2,594	2,064	800	800	800	800	1,541	2,449	3,577	4,080	
30	3,154	3,301	2,999	3,004	3,289	2,576	1,297	800	800	800	2,008	3,434	4,290	4,349	
40	3,679	3,728	3,079	3,008	3,904	2,929	2,561	800	800	800	2,260	4,533	4,503	4,442	
50	4,259	4,225	4,211	4,214	4,218	3,424	3,127	800	800	1,125	2,523	4,561	4,523	4,463	
60	4,339	4,249	4,220	4,224	4,232	3,980	3,817	1,125	800	1,500	2,908	4,578	4,535	4,471	
70	4,353	4,253	4,223	4,226	4,242	4,240	4,544	1,125	1,125	1,620	3,000	4,587	4,542	4,475	
80	4,359	4,255	4,223	4,228	4,245	4,274	4,544	1,500	1,500	2,859	3,000	4,594	4,547	4,477	
90	4,370	4,259	4,225	4,229	4,248	4,287	4,600	1,500	1,500	3,000	3,000	4,600	4,558	4,483	
Max	4,391	4,265	4,227	4,232	4,254	4,308	4,600	1,500	1,500	3,001	3,000	4,600	4,578	4,494	
Avg	3,723	3,487	3,417	3,498	3,487	3,152	2,895	1,021	1,011	1,543	2,326	3,720	3,990	4,152	2,305

E. 2020 Scenario A

Per-centile	Oct	Nov	Dec	Jan	Feb	Mar	Pre-VAMP 4/1–4/15	VAMP 4/16–4/30	VAMP 5/1–5/15	Post-VAMP 5/16–5/31	Jun	Jul	Aug	Sep	taf/yr
Min	1,803	800	741	706	641	800	800	800	800	800	800	800	898	1,185	
10	2,235	1,287	1,241	1,653	1,388	1,167	800	800	800	800	1,123	1,121	1,821	2,880	
20	2,921	2,208	2,719	2,995	2,397	2,017	800	800	800	800	1,548	2,559	3,061	3,939	
30	3,186	3,016	2,995	3,000	3,375	2,435	1,125	800	800	800	1,977	3,302	4,358	4,341	
40	3,588	3,769	3,007	3,008	3,715	3,216	2,561	800	800	800	2,256	4,465	4,504	4,382	
50	3,903	4,167	4,209	3,900	4,188	3,516	3,131	800	800	1,125	2,522	4,569	4,528	4,467	
60	4,339	4,238	4,221	4,223	4,231	3,979	3,931	1,125	800	1,500	2,911	4,598	4,550	4,478	
70	4,370	4,257	4,224	4,228	4,241	4,265	4,544	1,125	1,125	1,647	3,000	4,600	4,559	4,484	
80	4,384	4,263	4,226	4,231	4,248	4,291	4,544	1,500	1,500	2,807	3,000	4,600	4,571	4,490	
90	4,391	4,265	4,227	4,232	4,252	4,300	4,600	1,500	1,500	3,000	3,000	4,600	4,578	4,494	
Max	4,391	4,265	4,227	4,232	4,254	4,315	4,600	1,500	1,500	3,001	3,000	4,600	4,578	4,494	
Avg	3,667	3,441	3,387	3,417	3,467	3,183	2,883	1,021	1,011	1,543	2,343	3,705	3,914	4,124	2,286

F. 2020 Scenario A Changes (~~D — E~~)E – D)

Per-centile	Oct	Nov	Dec	Jan	Feb	Mar	Pre-VAMP 4/1–4/15	VAMP 4/16–4/30	VAMP 5/1–5/15	Post-VAMP 5/16–5/31	Jun	Jul	Aug	Sep	taf/yr
Min	139	0	18	-9	0	0	0	0	0	0	0	0	0	-13	
10	-166	-46	-112	-530	-29	-27	0	0	0	0	-56	-123	-524	13	
20	-95	-25	-36	-3	-197	-47	0	0	0	0	7	110	-516	-141	
30	32	-285	-4	-4	86	-141	-172	0	0	0	-31	-132	68	-8	
40	-91	41	-72	0	-189	287	0	0	0	0	-4	-68	1	-60	
50	-356	-58	-2	-314	-30	92	4	0	0	0	-1	8	5	4	
60	0	-11	1	-1	-1	-1	114	0	0	0	3	20	15	7	
70	17	4	1	2	-1	25	0	0	0	27	0	13	17	9	
80	25	8	3	3	3	17	0	0	0	-52	0	6	24	13	
90	21	6	2	3	4	13	0	0	0	0	0	0	20	11	
Max	0	0	0	0	0	7	0	0	0	0	0	0	0	0	
Avg	-56	-46	-30	-81	-20	31	-12	0	0	0	17	-15	-76	-28	-19

Table 5.1-6. CALSIM–Simulated Scenario A SWP Exports Monthly Distribution, for 2001 and 2020 Conditions (cfs)

A. 2001 Baseline

Per-centile	Oct	Nov	Dec	Jan	Feb	Mar	Pre-VAMP 4/1–4/15	VAMP 4/16–4/30	VAMP 5/1–5/15	Post-VAMP 5/16–5/31	Jun	Jul	Aug	Sep	taf/yr
Min	723	300	300	1,246	762	300	300	300	300	300	300	1,445	300	837	
10	1,235	980	2,643	2,645	1,674	1,121	304	304	606	606	842	3,367	1,639	1,658	
20	2,666	2,255	3,135	3,893	3,016	2,570	700	700	700	1,125	2,271	3,829	5,480	3,881	
30	3,675	2,571	3,966	4,556	3,482	3,175	1,500	700	700	1,868	2,886	4,123	5,819	4,851	
40	4,210	3,229	4,472	5,272	4,111	4,234	2,904	700	700	2,692	3,475	4,745	6,524	5,782	
50	4,984	4,208	5,193	5,967	5,176	5,260	3,679	700	700	2,976	4,112	5,418	6,680	6,209	
60	5,467	5,022	5,705	6,775	6,668	6,914	4,527	700	700	3,926	4,347	6,083	6,680	6,630	
70	6,371	6,588	7,001	7,296	7,735	7,228	5,500	1,125	1,125	4,521	5,266	6,658	6,749	6,680	
80	6,680	6,680	7,047	7,465	8,437	7,561	5,640	1,500	1,500	5,639	6,072	7,180	7,003	7,180	
90	6,680	6,680	7,195	8,493	8,500	7,561	5,697	1,500	1,500	5,640	6,680	7,180	7,180	7,180	
Max	6,680	6,680	7,678	8,500	8,500	7,561	5,697	1,500	1,500	5,687	6,680	7,180	7,180	7,180	
Avg	4,583	4,172	5,110	5,769	5,409	5,006	3,413	905	916	3,214	3,991	5,350	5,767	5,457	3,312

B. 2001 Scenario A

Per-centile	Oct	Nov	Dec	Jan	Feb	Mar	Pre-VAMP 4/1–4/15	VAMP 4/16–4/30	VAMP 5/1–5/15	Post-VAMP 5/16–5/31	Jun	Jul	Aug	Sep	taf/yr
Min	349	300	300	1,247	652	300	300	300	300	300	300	1,493	300	909	
10	1,163	1,216	2,525	2,630	1,850	1,004	300	300	425	425	1,247	3,276	2,071	1,669	
20	2,552	2,012	2,888	3,988	3,023	2,570	700	700	700	899	2,354	4,423	5,160	3,974	
30	3,593	2,378	3,715	4,810	3,476	3,174	1,500	700	700	1,868	2,982	4,756	6,301	4,938	
40	4,065	2,837	4,343	4,971	4,146	4,232	2,851	700	700	2,676	3,485	5,251	7,049	5,422	
50	4,983	4,002	5,170	6,003	5,596	6,049	3,679	700	700	2,984	4,015	6,160	7,379	6,208	
60	5,478	4,909	6,319	6,341	6,368	6,922	4,523	700	700	3,945	4,361	6,559	7,648	6,840	
70	5,959	5,620	7,239	8,500	8,500	8,234	5,500	1,125	1,125	4,521	5,263	6,978	7,858	7,019	
80	7,721	7,021	8,500	8,500	8,500	8,500	6,274	1,500	1,500	5,817	6,048	7,713	8,032	7,533	
90	8,500	8,500	8,500	8,500	8,500	8,500	6,551	1,500	1,500	6,549	7,116	8,500	8,310	8,500	
Max	8,500	8,500	8,500	8,500	8,500	8,500	6,608	1,500	1,500	6,598	8,500	8,500	8,500	8,500	
Avg	4,843	4,301	5,457	5,960	5,571	5,384	3,578	894	910	3,338	4,162	5,869	6,470	5,786	3,514

C. 2001 Scenario A Changes (~~A—B~~B – A)

Per-centile	Oct	Nov	Dec	Jan	Feb	Mar	Pre-VAMP 4/1–4/15	VAMP 4/16–4/30	VAMP 5/1–5/15	Post-VAMP 5/16–5/31	Jun	Jul	Aug	Sep	taf/yr
Min	-374	0	0	1	-110	0	0	0	0	0	0	48	0	72	
10	-72	236	-118	-15	176	-117	-4	-4	-181	-181	405	-91	432	11	
20	-114	-243	-247	95	7	0	0	0	0	-226	83	594	-320	93	
30	-82	-193	-251	254	-6	-1	0	0	0	0	96	633	482	87	
40	-145	-392	-129	-301	35	-2	-52	0	0	-16	10	506	525	-360	
50	-1	-206	-23	36	420	789	0	0	0	8	-97	742	699	-1	
60	11	-113	614	-434	-300	8	-4	0	0	19	14	476	968	210	
70	-412	-968	238	1,204	765	1,006	0	0	0	0	-3	320	1,109	339	
80	1,041	341	1,453	1,035	63	939	634	0	0	178	-24	533	1,029	353	
90	1,820	1,820	1,305	7	0	939	854	0	0	909	436	1,320	1,130	1,320	
Max	1,820	1,820	822	0	0	939	911	0	0	911	1,820	1,320	1,320	1,320	
Avg	260	129	347	191	162	378	165	-11	-6	124	171	519	703	329	202

Table 5.1-6. Continued

D. 2020 Baseline

Per-centile	Oct	Nov	Dec	Jan	Feb	Mar	Pre-VAMP 4/1–4/15	VAMP 4/16–4/30	VAMP 5/1–5/15	Post-VAMP 5/16–5/31	Jun	Jul	Aug	Sep	taf/yr
Min	586	301	1,065	1,358	778	300	300	300	300	300	300	1,781	302	801	
10	1,141	1,188	2,599	2,890	1,994	1,182	320	320	700	700	333	2,740	1,859	1,532	
20	2,362	1,957	3,562	4,160	3,104	2,823	1,560	700	700	700	2,292	3,856	4,842	3,983	
30	3,083	2,666	4,125	4,625	3,867	3,555	2,749	700	700	1,799	3,038	4,111	6,102	4,884	
40	4,003	3,192	4,326	4,929	4,478	4,476	3,450	700	700	2,653	3,717	4,691	6,594	5,380	
50	4,624	4,234	5,131	6,354	5,686	6,135	4,172	700	700	3,033	3,973	5,768	6,680	5,946	
60	5,394	5,354	5,501	7,296	7,431	7,060	4,964	700	700	3,804	4,538	6,680	6,749	6,380	
70	6,464	6,357	6,713	7,405	8,171	7,254	5,640	1,125	1,125	4,416	5,302	7,180	7,026	6,550	
80	6,680	6,680	7,032	8,070	8,437	7,561	5,640	1,500	1,500	5,639	5,969	7,180	7,180	6,686	
90	6,680	6,680	7,157	8,500	8,500	7,561	5,697	1,500	1,500	5,640	6,680	7,180	7,180	7,180	
Max	6,680	6,680	7,678	8,500	8,500	7,561	5,697	1,500	1,500	5,687	6,680	7,180	7,180	7,180	
Avg	4,436	4,220	5,122	5,987	5,692	5,201	3,763	914	920	3,160	3,981	5,433	5,861	5,290	3,357

E. 2020 Scenario A

Per-centile	Oct	Nov	Dec	Jan	Feb	Mar	Pre-VAMP 4/1–4/15	VAMP 4/16–4/30	VAMP 5/1–5/15	Post-VAMP 5/16–5/31	Jun	Jul	Aug	Sep	taf/yr
Min	300	300	300	1,358	778	300	300	300	300	300	300	1,592	300	776	
10	1,130	1,263	2,772	3,069	1,782	1,174	525	525	300	300	828	2,901	1,977	1,532	
20	2,293	1,904	3,477	4,296	3,113	2,805	1,650	700	700	700	2,348	4,196	4,422	3,879	
30	3,316	2,609	4,274	4,809	3,893	3,420	2,704	700	700	1,500	3,107	4,752	6,310	4,775	
40	3,801	3,336	4,814	5,115	5,166	4,477	3,450	700	700	2,696	3,723	5,053	6,870	5,353	
50	4,522	3,817	5,535	6,322	6,117	6,315	4,171	700	700	3,035	3,989	6,009	7,441	5,858	
60	5,397	4,563	5,984	7,874	7,793	7,600	4,964	700	700	3,804	4,688	6,446	7,716	6,420	
70	6,120	5,381	6,610	8,500	8,500	8,500	5,903	1,125	1,125	4,418	5,307	7,326	7,961	6,905	
80	7,963	6,788	8,239	8,500	8,500	8,500	6,551	1,500	1,500	5,798	5,958	8,473	8,129	7,282	
90	8,500	8,500	8,500	8,500	8,500	8,500	6,551	1,500	1,500	6,549	6,960	8,500	8,467	8,500	
Max	8,500	8,500	8,500	8,500	8,500	8,500	6,608	1,500	1,500	6,598	8,500	8,500	8,500	8,500	
Avg	4,831	4,335	5,535	6,253	5,762	5,639	4,045	921	891	3,263	4,155	5,906	6,408	5,532	3,559

F. 2020 Scenario A Changes (~~D —~~E – D)

Per-centile	Oct	Nov	Dec	Jan	Feb	Mar	Pre-VAMP 4/1–4/15	VAMP 4/16–4/30	VAMP 5/1–5/15	Post-VAMP 5/16–5/31	Jun	Jul	Aug	Sep	taf/yr
Min	-286	-1	-765	0	0	0	0	0	0	0	0	-189	-2	-25	
10	-11	75	173	179	-212	-8	205	205	-400	-400	495	161	118	0	
20	-69	-53	-85	136	9	-18	90	0	0	0	56	340	-420	-104	
30	233	-57	149	184	26	-135	-44	0	0	-299	69	641	208	-109	
40	-202	144	488	186	688	1	0	0	0	43	6	362	276	-27	
50	-102	-417	404	-32	431	180	-1	0	0	2	16	241	761	-88	
60	3	-791	483	578	362	540	0	0	0	0	150	-234	967	40	
70	-344	-976	-103	1,095	329	1,246	263	0	0	2	5	146	935	355	
80	1,283	108	1,207	430	63	939	911	0	0	158	-11	1,293	949	596	
90	1,820	1,820	1,343	0	0	939	854	0	0	909	280	1,320	1,287	1,320	
Max	1,820	1,820	822	0	0	939	911	0	0	911	1,820	1,320	1,320	1,320	
Avg	395	115	413	266	70	438	282	7	-29	104	174	473	547	242	202

Table 5.1-8. CALSIM–Simulated Scenario B CVP Tracy Pumping Monthly Distribution, for 2001 and 2020 Conditions (cfs)

A. 2001 Baseline

Per-centile	Oct	Nov	Dec	Jan	Feb	Mar	Pre-VAMP 4/1–4/15	VAMP 4/16–4/30	VAMP 5/1–5/15	Post-VAMP 5/16–5/31	Jun	Jul	Aug	Sep	taf/yr
Min	1,616	800	351	691	641	800	800	800	800	800'	800	800	868	1,410	
10	2,585	1,251	1,193	2,389	1,389	1,240	800	800	800	800	1,220	857	2,048	2,912	
20	2,998	2,431	2,889	2,999	2,877	1,865	800	800	800	800	1,734	2,571	3,718	4,275	
30	3,309	3,412	3,002	3,007	3,137	2,403	1,125	800	800	800	2,012	3,745	4,467	4,366	
40	3,914	4,217	3,212	3,026	3,679	2,772	1,500	800	800	800	2,339	4,536	4,505	4,448	
50	4,315	4,247	4,209	4,122	4,020	3,352	2,919	800	800	1,125	2,540	4,570	4,531	4,468	
60	4,344	4,250	4,221	4,222	4,224	3,685	3,564	1,125	800	1,500	2,852	4,577	4,535	4,470	
70	4,355	4,253	4,222	4,226	4,237	4,230	4,200	1,125	1,125	1,500	3,000	4,588	4,543	4,475	
80	4,365	4,256	4,224	4,228	4,245	4,274	4,544	1,500	1,500	2,692	3,000	4,600	4,553	4,481	
90	4,374	4,260	4,225	4,229	4,247	4,286	4,600	1,500	1,500	3,000	3,000	4,600	4,562	4,485	
Max	4,391	4,265	4,227	4,232	4,254	4,308	4,600	1,500	1,500	3,001	3,000	4,600	4,578	4,494	
Avg	3,781	3,541	3,415	3,504	3,479	3,088	2,737	1,019	1,011	1,507	2,365	3,790	4,021	4,183	2,312

B. 2001 Scenario B

Per-centile	Oct	Nov	Dec	Jan	Feb	Mar	Pre-VAMP 4/1–4/15	VAMP 4/16–4/30	VAMP 5/1–5/15	Post-VAMP 5/16–5/31	Jun	Jul	Aug	Sep	taf/yr
Min	1,958	800	17	592	641	800	800	800	800	800	800	800	800	1,402	
10	2,584	1,266	1,086	1,921	1,386	1,202	800	800	800	800	1,220	856	1,799	2,911	
20	2,980	2,385	2,352	2,991	2,208	2,035	800	800	800	800	1,784	2,554	3,513	4,259	
30	3,150	3,218	2,999	3,002	3,082	2,520	1,125	800	800	800	2,027	4,393	4,463	4,362	
40	3,622	3,819	3,005	3,008	3,426	2,643	1,500	800	800	800	2,326	4,539	4,511	4,448	
50	4,294	4,218	4,209	3,568	3,925	3,059	2,939	800	800	1,125	2,557	4,573	4,531	4,468	
60	4,342	4,250	4,222	4,220	4,222	3,651	3,564	1,125	800	1,500	2,885	4,582	4,538	4,472	
70	4,355	4,253	4,222	4,226	4,236	4,245	4,202	1,125	1,125	1,500	3,000	4,590	4,544	4,476	
80	4,366	4,257	4,224	4,228	4,245	4,276	4,544	1,500	1,500	2,692	3,000	4,600	4,553	4,481	
90	4,372	4,259	4,225	4,229	4,247	4,284	4,600	1,500	1,500	3,000	3,000	4,600	4,559	4,484	
Max	4,391	4,265	4,227	4,232	4,254	4,308	4,600	1,500	1,500	3,001	3,000	4,600	4,578	4,494	
Avg	3,752	3,482	3,344	3,434	3,366	3,060	2,736	1,019	1,011	1,510	2,379	3,816	4,020	4,165	2,291

C. 2001 Scenario B Changes (~~A—B~~B – A)

Per-centile	Oct	Nov	Dec	Jan	Feb	Mar	Pre-VAMP 4/1–4/15	VAMP 4/16–4/30	VAMP 5/1–5/15	Pos-t VAMP 5/16–5/31	Jun	Jul	Aug	Sep	taf/yr
Min	342	0	-334	-99	0	0	0	0	0	0	0	0	-68	-8	
10	-1	15	-107	-468	-3	-38	0	0	0	0	0	-1	-249	-1	
20	-18	-46	-537	-8	-669	170	0	0	0	0	50	-17	-205	-16	
30	-159	-194	-3	-5	-55	117	0	0	0	0	15	648	-4	-4	
40	-292	-398	-207	-18	-253	-129	0	0	0	0	-13	3	6	0	
50	-21	-29	0	-554	-95	-293	19	0	0	0	17	3	0	0	
60	-2	0	1	-2	-2	-34	0	0	0	0	33	5	3	2	
70	0	0	0	0	-1	15	2	0	0	0	0	2	1	1	
80	1	1	0	0	0	2	0	0	0	0	0	0	0	0	
90	-2	-1	0	0	0	-2	0	0	0	0	0	0	-3	-1	
Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Avg	-29	-59	-71	-70	-113	-28	-1	0	0	3	14	26	-1	-18	-21

Table 5.1-8. Continued

D. 2020 Baseline

Percentile	Oct	Nov	Dec	Jan	Feb	Mar	Pre-VAMP 4/1–4/15	VAMP 4/16–4/30	VAMP 5/1–5/15	Post-VAMP 5/16–5/31	Jun	Jul	Aug	Sep	taf/yr
Min	1,664	800	723	715	641	800	800	800	800	800	800	800	898	1,198	
10	2,401	1,333	1,353	2,183	1,417	1,194	800	800	800	800	1,179	1,244	2,345	2,867	
20	3,016	2,233	2,755	2,998	2,594	2,064	800	800	800	800	1,541	2,449	3,577	4,080	
30	3,154	3,301	2,999	3,004	3,289	2,576	1,297	800	800	800	2,008	3,434	4,290	4,349	
40	3,679	3,728	3,079	3,008	3,904	2,929	2,561	800	800	800	2,260	4,533	4,503	4,442	
50	4,259	4,225	4,211	4,214	4,218	3,424	3,127	800	800	1,125	2,523	4,561	4,523	4,463	
60	4,339	4,249	4,220	4,224	4,232	3,980	3,817	1,125	800	1,500	2,908	4,578	4,535	4,471	
70	4,353	4,253	4,223	4,226	4,242	4,240	4,544	1,125	1,125	1,620	3,000	4,587	4,542	4,475	
80	4,359	4,255	4,223	4,228	4,245	4,274	4,544	1,500	1,500	2,859	3,000	4,594	4,547	4,477	
90	4,370	4,259	4,225	4,229	4,248	4,287	4,600	1,500	1,500	3,000	3,000	4,600	4,558	4,483	
Max	4,391	4,265	4,227	4,232	4,254	4,308	4,600	1,500	1,500	3,001	3,000	4,600	4,578	4,494	
Avg	3,723	3,487	3,417	3,498	3,487	3,152	2,895	1,021	1,011	1,543	2,326	3,720	3,990	4,152	2,305

E. 2020 Scenario B

Percentile	Oct	Nov	Dec	Jan	Feb	Mar	Pre-VAMP 4/1–4/15	VAMP 4/16–4/30	VAMP 5/1–5/15	Post-VAMP 5/16–5/31	Jun	Jul	Aug	Sep	taf/yr
Min	1,693	800	682	735	641	800	800	800	800	800	800	800	898	1,193	
10	2,313	1,262	1,366	2,169	1,060	1,197	800	800	800	800	1,164	910	2,308	2,860	
20	3,024	2,199	2,656	2,998	2,575	1,792	800	800	800	800	1,502	2,559	3,119	4,031	
30	3,062	2,939	2,992	3,004	2,997	2,561	1,500	800	800	800	1,860	3,537	4,370	4,346	
40	3,564	3,731	3,004	3,008	3,580	2,849	2,601	800	800	800	2,261	4,531	4,500	4,419	
50	4,220	4,217	4,209	4,002	3,943	3,293	3,127	800	800	1,125	2,523	4,561	4,523	4,464	
60	4,334	4,247	4,220	4,220	4,231	3,952	3,856	1,125	800	1,500	2,908	4,578	4,535	4,470	
70	4,352	4,253	4,223	4,225	4,235	4,242	4,544	1,125	1,125	1,666	3,000	4,587	4,542	4,475	
80	4,361	4,255	4,223	4,228	4,245	4,274	4,544	1,500	1,500	2,846	3,000	4,597	4,549	4,478	
90	4,370	4,259	4,225	4,229	4,248	4,281	4,600	1,500	1,500	3,000	3,000	4,600	4,558	4,483	
Max	4,391	4,265	4,227	4,232	4,254	4,305	4,600	1,500	1,500	3,001	3,000	4,600	4,578	4,494	
Avg	3,684	3,403	3,368	3,470	3,404	3,095	2,911	1,021	1,011	1,543	2,324	3,750	3,991	4,138	2,286

F. 2020 Scenario B Changes (~~D—E~~E – D)

Percentile	Oct	Nov	Dec	Jan	Feb	Mar	Pre-Vamp 4/1–4/15	Vamp 4/16–4/30	Vamp 5/1–5/15	Post-Vamp 5/16–5/31	Jun	Jul	Aug	Sep	taf/yr
Min	29	0	-41	20	0	0	0	0	0	0	0	0	0	-5	
10	-88	-71	13	-14	-357	3	0	0	0	0	-15	-334	-37	-7	
20	8	-34	-99	0	-19	-272	0	0	0	0	-39	110	-458	-49	
30	-92	-362	-7	0	-292	-15	203	0	0	0	-148	103	80	-3	
40	-115	3	-75	0	-324	-80	40	0	0	0	1	-2	-3	-23	
50	-39	-8	-2	-212	-275	-131	0	0	0	0	0	0	0	1	
60	-5	-2	0	-4	-1	-28	39	0	0	0	0	0	0	-1	
70	-1	0	0	-1	-7	2	0	0	0	47	0	0	0	0	
80	2	0	0	0	0	0	0	0	0	-14	0	3	2	1	
90	0	0	0	0	0	-6	0	0	0	0	0	0	0	0	
Max	0	0	0	0	0	-3	0	0	0	0	0	0	0	0	
Avg	-39	-84	-49	-28	-83	-57	16	0	0	1	-2	30	1	-14	-19

Table 5.1-9. CALSIM–Simulated Scenario B SWP Exports Monthly Distribution, for 2001 and 2020 Conditions (cfs)

A. 2001 Baseline

Per-centile	Oct	Nov	Dec	Jan	Feb	Mar	Pre-VAMP 4/1–4/15	VAMP 4/16–4/30	VAMP 5/1–5/15	Post-VAMP 5/16–5/31	Jun	Jul	Aug	Sep	taf/yr
Min	723	300	300	1,246	762	300	300	300	300	300	300	1,445	300	837	
10	1,235	980	2,643	2,645	1,674	1,121	304	304	606	606	842	3,367	1,639	1,658	
20	2,666	2,255	3,135	3,893	3,016	2,570	700	700	700	1,125	2,271	3,829	5,480	3,881	
30	3,675	2,571	3,966	4,556	3,482	3,175	1,500	700	700	1,868	2,886	4,123	5,819	4,851	
40	4,210	3,229	4,472	5,272	4,111	4,234	2,904	700	700	2,692	3,475	4,745	6,524	5,782	
50	4,984	4,208	5,193	5,967	5,176	5,260	3,679	700	700	2,976	4,112	5,418	6,680	6,209	
60	5,467	5,022	5,705	6,775	6,668	6,914	4,527	700	700	3,926	4,347	6,083	6,680	6,630	
70	6,371	6,588	7,001	7,296	7,735	7,228	5,500	1,125	1,125	4,521	5,266	6,658	6,749	6,680	
80	6,680	6,680	7,047	7,465	8,437	7,561	5,640	1,500	1,500	5,639	6,072	7,180	7,003	7,180	
90	6,680	6,680	7,195	8,493	8,500	7,561	5,697	1,500	1,500	5,640	6,680	7,180	7,180	7,180	
Max	6,680	6,680	7,678	8,500	8,500	7,561	5,697	1,500	1,500	5,687	6,680	7,180	7,180	7,180	
Avg	4,583	4,172	5,110	5,769	5,409	5,006	3,413	905	916	3,214	3,991	5,350	5,767	5,457	3,312

B. 2001 Scenario B

Per-centile	Oct	Nov	Dec	Jan	Feb	Mar	Pre-VAMP 4/1–4/15	VAMP 4/16–4/30	VAMP 5/1–5/15	Post-VAMP 5/16–5/31	Jun	Jul	Aug	Sep	taf/yr
Min	300	300	300	1,246	328	300	300	300	300	300	300	1,929	300	1,150	
10	1,180	921	2,211	2,622	1,672	1,122	316	316	486	486	612	3,083	1,810	1,656	
20	2,563	2,051	2,856	3,492	3,012	2,720	700	700	700	903	2,138	4,226	5,162	3,846	
30	3,363	2,394	3,769	4,316	3,481	3,174	1,500	700	700	1,868	2,849	4,775	6,418	4,787	
40	3,904	3,014	4,314	4,972	4,111	4,375	2,849	700	700	2,682	3,481	5,480	6,848	5,413	
50	4,874	3,820	5,218	5,372	5,296	5,327	3,679	700	700	2,978	4,112	6,146	7,080	6,232	
60	5,260	4,744	5,330	6,531	6,368	6,468	4,527	700	700	3,926	4,440	6,611	7,334	6,568	
70	5,979	5,673	6,726	7,180	7,180	7,180	5,502	1,125	1,125	4,519	5,266	6,899	8,055	6,832	
80	7,713	6,788	7,180	7,180	7,180	7,180	5,891	1,500	1,500	5,827	6,072	7,748	8,307	7,448	
90	8,500	8,500	7,180	7,180	7,180	7,180	5,891	1,500	1,500	5,890	7,111	8,186	8,310	8,500	
Max	8,500	8,500	7,180	7,180	7,180	7,180	5,948	1,500	1,500	5,937	7,180	8,500	8,500	8,500	
Avg	4,816	4,252	4,892	5,401	4,934	4,890	3,455	903	912	3,221	4,002	5,877	6,373	5,660	3,345

C. 2001 Scenario B Changes (~~A—B~~B – A)

Per-centile	Oct	Nov	Dec	Jan	Feb	Mar	Pre-VAMP 4/1–4/15	VAMP 4/16–4/30	VAMP 5/1–5/15	Post-VAMP 5/16–5/31	Jun	Jul	Aug	Sep	taf/yr
Min	-423	0	0	0	-434	0	0	0	0	0	0	484	0	313	
10	-55	-59	-432	-23	-2	1	12	12	-120	-120	-230	-284	171	-2	
20	-103	-204	-279	-401	-4	150	0	0	0	-222	-133	397	-318	-35	
30	-312	-177	-197	-240	-1	-1	0	0	0	0	-37	652	599	-64	
40	-306	-215	-158	-300	0	141	-54	0	0	-10	6	735	324	-369	
50	-110	-388	25	-595	120	67	0	0	0	2	0	728	400	23	
60	-207	-278	-375	-244	-300	-446	0	0	0	0	93	528	654	-62	
70	-392	-915	-275	-116	-555	-48	2	0	0	-2	0	241	1,306	152	
80	1,033	108	133	-285	-1,257	-381	251	0	0	187	0	568	1,304	268	
90	1,820	1,820	-15	-1,313	-1,320	-381	194	0	0	250	431	1,006	1,130	1,320	
Max	1,820	1,820	-498	-1,320	-1,320	-381	251	0	0	250	500	1,320	1,320	1,320	
Avg	233	80	-218	-368	-475	-116	42	-2	-4	7	11	527	606	203	33

Table 5.1-9. Continued

D. 2020 Baseline

Percentile	Oct	Nov	Dec	Jan	Feb	Mar	Pre-VAMP 4/1–4/15	VAMP 4/16–4/30	VAMP 5/1–5/15	Post-VAMP 5/16–5/31	Jun	Jul	Aug	Sep	taf/yr
Min	586	301	1,065	1,358	778	300	300	300	300	300	300	1,781	302	801	
10	1,141	1,188	2,599	2,890	1,994	1,182	320	320	700	700	333	2,740	1,859	1,532	
20	2,362	1,957	3,562	4,160	3,104	2,823	1,560	700	700	700	2,292	3,856	4,842	3,983	
30	3,083	2,666	4,125	4,625	3,867	3,555	2,749	700	700	1,799	3,038	4,111	6,102	4,884	
40	4,003	3,192	4,326	4,929	4,478	4,476	3,450	700	700	2,653	3,717	4,691	6,594	5,380	
50	4,624	4,234	5,131	6,354	5,686	6,135	4,172	700	700	3,033	3,973	5,768	6,680	5,946	
60	5,394	5,354	5,501	7,296	7,431	7,060	4,964	700	700	3,804	4,538	6,680	6,749	6,380	
70	6,464	6,357	6,713	7,405	8,171	7,254	5,640	1,125	1,125	4,416	5,302	7,180	7,026	6,550	
80	6,680	6,680	7,032	8,070	8,437	7,561	5,640	1,500	1,500	5,639	5,969	7,180	7,180	6,686	
90	6,680	6,680	7,157	8,500	8,500	7,561	5,697	1,500	1,500	5,640	6,680	7,180	7,180	7,180	
Max	6,680	6,680	7,678	8,500	8,500	7,561	5,697	1,500	1,500	5,687	6,680	7,180	7,180	7,180	
Avg	4,436	4,220	5,122	5,987	5,692	5,201	3,763	914	920	3,160	3,981	5,433	5,861	5,290	3,357

E. 2020 Scenario B

Percentile	Oct	Nov	Dec	Jan	Feb	Mar	Pre-VAMP 4/1–4/15	VAMP 4/16–4/30	VAMP 5/1–5/15	Post-VAMP 5/16–5/31	Jun	Jul	Aug	Sep	taf/yr
Min	300	300	300	1,359	778	300	300	300	300	300	300	2,060	302	817	
10	1,109	1,166	2,509	3,002	1,838	1,238	700	700	700	700	546	2,779	1,525	1,523	
20	2,426	1,998	3,138	4,009	3,194	2,827	1,541	700	700	700	2,262	4,420	4,699	3,674	
30	3,135	2,676	3,957	4,321	3,765	3,368	2,749	700	700	1,799	2,887	4,752	6,227	4,843	
40	3,705	3,289	4,316	4,931	4,309	4,476	3,450	700	700	2,686	3,734	5,129	6,978	5,331	
50	4,480	3,928	5,233	6,077	5,329	5,900	4,171	700	700	3,031	3,963	6,242	7,441	5,865	
60	5,335	4,490	5,332	7,180	7,180	7,180	4,973	700	700	3,804	4,533	6,687	7,688	6,156	
70	6,147	5,342	6,138	7,180	7,180	7,180	5,772	1,125	1,125	4,416	5,305	7,443	7,988	6,724	
80	8,003	6,745	7,180	7,180	7,180	7,180	5,891	1,500	1,500	5,805	5,969	8,214	8,189	7,229	
90	8,500	8,500	7,180	7,180	7,180	7,180	5,948	1,500	1,500	5,890	7,029	8,500	8,310	8,500	
Max	8,500	8,500	7,180	7,180	7,180	7,180	5,948	1,500	1,500	5,937	7,180	8,500	8,500	8,500	
Avg	4,749	4,244	4,957	5,622	5,167	5,092	3,854	923	918	3,212	4,024	5,997	6,372	5,477	3,393

F. 2020 Scenario B Changes (~~D — E~~E – D)

Percentile	Oct	Nov	Dec	Jan	Feb	Mar	Pre-VAMP 4/1–4/15	VAMP 4/16–4/30	VAMP 5/1–5/15	Post-VAMP 5/16–5/31	Jun	Jul	Aug	Sep	taf/yr
Min	-286	-1	-765	1	0	0	0	0	0	0	0	279	0	16	
10	-32	-22	-90	112	-156	56	380	380	0	0	213	39	-334	-9	
20	64	41	-424	-151	90	4	-19	0	0	0	-30	564	-143	-309	
30	52	10	-168	-304	-102	-187	0	0	0	0	-151	641	125	-41	
40	-298	97	-10	2	-169	0	0	0	0	33	17	438	384	-49	
50	-144	-306	102	-277	-357	-235	-1	0	0	-2	-10	474	761	-81	
60	-59	-864	-169	-116	-251	120	9	0	0	0	-5	7	939	-224	
70	-317	-1,015	-575	-225	-991	-74	132	0	0	0	3	263	962	174	
80	1,323	65	148	-890	-1,257	-381	251	0	0	166	0	1,034	1,009	543	
90	1,820	1,820	23	-1,320	-1,320	-381	251	0	0	250	349	1,320	1,130	1,320	
Max	1,820	1,820	-498	-1,320	-1,320	-381	251	0	0	250	500	1,320	1,320	1,320	
Avg	313	24	-165	-365	-525	-109	92	9	-1	52	43	564	511	187	37

Table 5.1-10. CALSIM–Simulated Scenario C CVP Tracy Pumping Monthly Distribution, for 2001 and 2020 Conditions (cfs) Page 1 of 2

A. 2001 Baseline

Per-centile	Oct	Nov	Dec	Jan	Feb	Mar	Pre-VAMP 4/1–4/15	VAMP 4/16–4/30	VAMP 5/1–5/15	Post-VAMP 5/16–5/31	Jun	Jul	Aug	Sep	taf/yr
Min	1,616	800	351	691	641	800	800	800	800	800	800	800	868	1,410	
10	2,585	1,251	1,193	2,389	1,389	1,240	800	800	800	800	1,220	857	2,048	2,912	
20	2,998	2,431	2,889	2,999	2,877	1,865	800	800	800	800	1,734	2,571	3,718	4,275	
30	3,309	3,412	3,002	3,007	3,137	2,403	1,125	800	800	800	2,012	3,745	4,467	4,366	
40	3,914	4,217	3,212	3,026	3,679	2,772	1,500	800	800	800	2,339	4,536	4,505	4,448	
50	4,315	4,247	4,209	4,122	4,020	3,352	2,919	800	800	1,125	2,540	4,570	4,531	4,468	
60	4,344	4,250	4,221	4,222	4,224	3,685	3,564	1,125	800	1,500	2,852	4,577	4,535	4,470	
70	4,355	4,253	4,222	4,226	4,237	4,230	4,200	1,125	1,125	1,500	3,000	4,588	4,543	4,475	
80	4,365	4,256	4,224	4,228	4,245	4,274	4,544	1,500	1,500	2,692	3,000	4,600	4,553	4,481	
90	4,374	4,260	4,225	4,229	4,247	4,286	4,600	1,500	1,500	3,000	3,000	4,600	4,562	4,485	
Max	4,391	4,265	4,227	4,232	4,254	4,308	4,600	1,500	1,500	3,001	3,000	4,600	4,578	4,494	
Avg	3,781	3,541	3,415	3,504	3,479	3,088	2,737	1,019	1,011	1,507	2,365	3,790	4,021	4,183	2,312

B. 2001 Scenario C

Per-centile	Oct	Nov	Dec	Jan	Feb	Mar	Pre-VAMP 4/1–4/15	VAMP 4/16–4/30	VAMP 5/1–5/15	Post-VAMP 5/16–5/31	Jun	Jul	Aug	Sep	taf/yr
Min	1,751	800	16	603	641	800	800	800	800	800	800	800	800	1,394	
10	2,623	1,280	1,087	1,921	1,014	872	800	800	800	800	1,220	859	1,753	2,911	
20	2,989	2,380	2,426	2,993	2,445	1,990	800	800	800	800	1,779	2,556	3,517	4,262	
30	3,157	3,005	2,999	3,004	3,096	2,325	1,125	800	800	800	2,027	3,985	4,463	4,362	
40	3,638	3,819	3,083	3,009	3,426	2,635	1,500	800	800	800	2,327	4,540	4,508	4,455	
50	4,294	4,203	4,209	4,042	3,941	2,867	2,939	800	800	1,125	2,557	4,573	4,531	4,469	
60	4,343	4,250	4,222	4,222	4,225	3,509	3,564	1,125	800	1,500	2,921	4,583	4,539	4,473	
70	4,355	4,253	4,223	4,226	4,237	4,230	4,202	1,125	1,125	1,500	3,000	4,588	4,543	4,475	
80	4,366	4,255	4,224	4,228	4,245	4,276	4,544	1,500	1,500	2,596	3,000	4,600	4,553	4,481	
90	4,374	4,260	4,225	4,229	4,247	4,291	4,600	1,500	1,500	3,000	3,000	4,600	4,562	4,486	
Max	4,391	4,265	4,227	4,232	4,254	4,307	4,600	1,500	1,500	3,001	3,000	4,600	4,578	4,494	
Avg	3,751	3,465	3,364	3,450	3,383	3,003	2,737	1,019	1,011	1,505	2,385	3,809	4,012	4,165	2,289

C. 2001 Scenario C Changes (~~A—B~~B – A)

Per-centile	Oct	Nov	Dec	Jan	Feb	Mar	Pre-VAMP 4/1–4/15	VAMP 4/16–4/30	VAMP 5/1–5/15	Post-VAMP 5/16–5/31	Jun	Jul	Aug	Sep	taf/yr
Min	135	0	-335	-88	0	0	0	0	0	0	0	0	-68	-16	
10	38	29	-106	-468	-375	-368	0	0	0	0	0	2	-295	-1	
20	-9	-51	-463	-6	-432	125	0	0	0	0	45	-15	-201	-13	
30	-152	-407	-3	-3	-41	-78	0	0	0	0	15	240	-4	-4	
40	-276	-398	-129	-17	-253	-137	0	0	0	0	-12	4	3	7	
50	-21	-44	0	-80	-79	-485	19	0	0	0	17	3	0	1	
60	-1	0	1	0	1	-176	0	0	0	0	69	6	4	3	
70	0	0	1	0	0	0	2	0	0	0	0	0	0	0	
80	1	-1	0	0	0	2	0	0	0	-96	0	0	0	0	
90	0	0	0	0	0	5	0	0	0	0	0	0	0	1	
Max	0	0	0	0	0	-1	0	0	0	0	0	0	0	0	
Avg	-30	-76	-51	-54	-96	-85	0	0	0	-2	20	19	-9	-18	-23

Table 5.1-10. Continued

D. 2020 Baseline

Percentile	Oct	Nov	Dec	Jan	Feb	Mar	Pre-VAMP 4/1–4/15	VAMP 4/16–4/30	VAMP 5/1–5/15	Post-VAMP 5/16–5/31	Jun	Jul	Aug	Sep	taf/yr
Min	1,664	800	723	715	641	800	800	800	800	800	800	800	898	1,198	
10	2,401	1,333	1,353	2,183	1,417	1,194	800	800	800	800	1,179	1,244	2,345	2,867	
20	3,016	2,233	2,755	2,998	2,594	2,064	800	800	800	800	1,541	2,449	3,577	4,080	
30	3,154	3,301	2,999	3,004	3,289	2,576	1,297	800	800	800	2,008	3,434	4,290	4,349	
40	3,679	3,728	3,079	3,008	3,904	2,929	2,561	800	800	800	2,260	4,533	4,503	4,442	
50	4,259	4,225	4,211	4,214	4,218	3,424	3,127	800	800	1,125	2,523	4,561	4,523	4,463	
60	4,339	4,249	4,220	4,224	4,232	3,980	3,817	1,125	800	1,500	2,908	4,578	4,535	4,471	
70	4,353	4,253	4,223	4,226	4,242	4,240	4,544	1,125	1,125	1,620	3,000	4,587	4,542	4,475	
80	4,359	4,255	4,223	4,228	4,245	4,274	4,544	1,500	1,500	2,859	3,000	4,594	4,547	4,477	
90	4,370	4,259	4,225	4,229	4,248	4,287	4,600	1,500	1,500	3,000	3,000	4,600	4,558	4,483	
Max	4,391	4,265	4,227	4,232	4,254	4,308	4,600	1,500	1,500	3,001	3,000	4,600	4,578	4,494	
Avg	3,723	3,487	3,417	3,498	3,487	3,152	2,895	1,021	1,011	1,543	2,326	3,720	3,990	4,152	2,305

E. 2020 Scenario C

Percentile	Oct	Nov	Dec	Jan	Feb	Mar	Pre-VAMP 4/1–4/15	VAMP 4/16–4/30	VAMP 5/1–5/15	Post-VAMP 5/16–5/31	Jun	Jul	Aug	Sep	taf/yr
Min	1,661	800	740	720	641	800	800	800	800	800	800	800	898	1,187	
10	2,341	1,295	1,285	1,818	1,063	1,166	800	800	800	800	1,113	856	1,986	2,803	
20	2,921	2,181	2,690	2,995	2,252	1,762	800	800	800	800	1,577	2,248	3,486	4,018	
30	3,053	3,196	2,992	3,000	2,993	2,457	1,500	800	800	800	1,833	3,491	4,149	4,350	
40	3,619	3,694	3,004	3,008	3,562	2,644	2,608	800	800	800	2,261	4,529	4,500	4,436	
50	4,234	4,007	4,209	3,780	3,943	3,284	3,129	800	800	1,125	2,523	4,562	4,523	4,465	
60	4,326	4,240	4,220	4,218	4,229	3,963	3,843	1,125	800	1,500	2,908	4,579	4,536	4,472	
70	4,353	4,253	4,223	4,226	4,235	4,249	4,544	1,125	1,125	1,589	3,000	4,588	4,542	4,475	
80	4,359	4,255	4,223	4,228	4,245	4,277	4,544	1,500	1,500	2,813	3,000	4,598	4,551	4,479	
90	4,370	4,259	4,225	4,229	4,247	4,287	4,600	1,500	1,500	3,000	3,000	4,600	4,558	4,483	
Max	4,391	4,265	4,227	4,232	4,254	4,308	4,600	1,500	1,500	3,001	3,000	4,600	4,578	4,494	
Avg	3,677	3,407	3,380	3,417	3,385	3,083	2,910	1,021	1,011	1,542	2,316	3,695	3,971	4,134	2,276

F. 2020 Scenario C Changes (~~D — E~~E – D)

Percentile	Oct	Nov	Dec	Jan	Feb	Mar	Pre-VAMP 4/1–4/15	VAMP 4/16–4/30	VAMP 5/1–5/15	Post-VAMP 5/16–5/31	Jun	Jul	Aug	Sep	taf/yr
Min	-3	0	17	5	0	0	0	0	0	0	0	0	0	-11	
10	-60	-38	-68	-365	-354	-28	0	0	0	0	-66	-388	-359	-64	
20	-95	-52	-65	-3	-342	-302	0	0	0	0	36	-201	-91	-62	
30	-101	-105	-7	-4	-296	-119	203	0	0	0	-175	57	-141	1	
40	-60	-34	-75	0	-342	-285	46	0	0	0	1	-4	-3	-6	
50	-25	-218	-2	-434	-275	-140	2	0	0	0	0	1	0	2	
60	-13	-9	0	-6	-3	-17	26	0	0	0	0	1	1	1	
70	0	0	0	0	-7	9	0	0	0	-31	0	1	0	0	
80	0	0	0	0	0	3	0	0	0	-47	0	4	4	2	
90	0	0	0	0	-1	0	0	0	0	0	0	0	0	0	
Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Avg	-46	-80	-37	-81	-102	-69	15	0	0	-1	-10	-25	-19	-18	-29

Table 5.1-11. CALSIM–Simulated Scenario C SWP Exports Monthly Distribution, for 2001 and 2020 Conditions (cfs)

A. 2001 Baseline

Per-centile	Oct	Nov	Dec	Jan	Feb	Mar	Pre-VAMP 4/1–4/15	VAMP 4/16–4/30	VAMP 5/1–5/15	Post-VAMP 5/16–5/31	Jun	Jul	Aug	Sep	taf/yr
Min	723	300	300	1,246	762	300	300	300	300	300	300	1,445	300	837	
10	1,235	980	2,643	2,645	1,674	1,121	304	304	606	606	842	3,367	1,639	1,658	
20	2,666	2,255	3,135	3,893	3,016	2,570	700	700	700	1,125	2,271	3,829	5,480	3,881	
30	3,675	2,571	3,966	4,556	3,482	3,175	1,500	700	700	1,868	2,886	4,123	5,819	4,851	
40	4,210	3,229	4,472	5,272	4,111	4,234	2,904	700	700	2,692	3,475	4,745	6,524	5,782	
50	4,984	4,208	5,193	5,967	5,176	5,260	3,679	700	700	2,976	4,112	5,418	6,680	6,209	
60	5,467	5,022	5,705	6,775	6,668	6,914	4,527	700	700	3,926	4,347	6,083	6,680	6,630	
70	6,371	6,588	7,001	7,296	7,735	7,228	5,500	1,125	1,125	4,521	5,266	6,658	6,749	6,680	
80	6,680	6,680	7,047	7,465	8,437	7,561	5,640	1,500	1,500	5,639	6,072	7,180	7,003	7,180	
90	6,680	6,680	7,195	8,493	8,500	7,561	5,697	1,500	1,500	5,640	6,680	7,180	7,180	7,180	
Max	6,680	6,680	7,678	8,500	8,500	7,561	5,697	1,500	1,500	5,687	6,680	7,180	7,180	7,180	
Avg	4,583	4,172	5,110	5,769	5,409	5,006	3,413	905	916	3,214	3,991	5,350	5,767	5,457	3,312

B. 2001 Scenario C

Per-centile	Oct	Nov	Dec	Jan	Feb	Mar	Pre-VAMP 4/1–4/15	VAMP 4/16–4/30	VAMP 5/1–5/15	Post-VAMP 5/16–5/31	Jun	Jul	Aug	Sep	taf/yr
Min	300	300	300	1,248	752	300	300	300	300	300	300	1,483	300	915	
10	1,289	924	2,174	2,630	1,669	1,124	300	300	609	609	559	2,882	1,448	1,655	
20	2,425	1,867	2,820	3,682	2,984	2,570	700	700	700	1,125	2,456	4,182	5,134	3,351	
30	3,471	2,474	3,761	4,809	3,481	3,174	1,500	700	700	1,882	2,994	4,673	6,145	4,851	
40	3,727	3,014	4,348	4,958	4,148	4,375	2,849	700	700	2,690	3,590	5,253	6,621	5,278	
50	4,787	3,919	5,191	5,685	5,597	5,613	3,679	700	700	2,973	4,062	6,131	7,022	6,277	
60	5,338	5,000	6,319	6,391	6,320	6,442	4,527	700	700	3,926	4,338	6,565	7,266	6,563	
70	5,969	5,778	6,912	8,500	8,500	7,561	5,502	1,125	1,125	4,521	5,262	6,822	7,699	6,924	
80	8,190	6,748	8,500	8,500	8,500	7,561	5,640	1,500	1,500	5,639	6,071	7,741	8,308	7,433	
90	8,500	8,500	8,500	8,500	8,500	7,561	5,697	1,500	1,500	5,640	6,680	8,500	8,310	8,500	
Max	8,500	8,500	8,500	8,500	8,500	7,561	5,697	1,500	1,500	5,687	6,680	8,500	8,500	8,500	
Avg	4,815	4,269	5,338	5,927	5,477	5,003	3,390	900	916	3,201	4,029	5,858	6,299	5,680	3,437

C. 2001 Scenario C Changes (~~A—B~~B – A)

Per-centile	Oct	Nov	Dec	Jan	Feb	Mar	Pre-VAMP 4/1–4/15	VAMP 4/16–4/30	VAMP 5/1–5/15	Post-VAMP 5/16–5/31	Jun	Jul	Aug	Sep	taf/yr
Min	-423	0	0	2	-10	0	0	0	0	0	0	38	0	78	
10	54	-56	-469	-15	-5	3	-4	-4	3	3	-283	-485	-191	-3	
20	-241	-388	-315	-211	-32	0	0	0	0	0	185	353	-346	-530	
30	-204	-97	-205	253	-1	-1	0	0	0	14	108	550	326	0	
40	-483	-215	-124	-314	37	141	-54	0	0	-3	115	508	97	-504	
50	-197	-289	-2	-282	421	353	0	0	0	-4	-50	713	342	68	
60	-129	-22	614	-384	-348	-472	0	0	0	0	-9	482	586	-67	
70	-402	-810	-89	1,204	765	333	2	0	0	0	-4	164	950	244	
80	1,510	68	1,453	1,035	63	0	0	0	0	0	-1	561	1,305	253	
90	1,820	1,820	1,305	7	0	0	0	0	0	0	0	1,320	1,130	1,320	
Max	1,820	1,820	822	0	0	0	0	0	0	0	0	1,320	1,320	1,320	
Avg	232	97	228	158	68	-3	-23	-5	0	-13	38	508	532	223	126

Table 5.1-11. Continued

D. 2020 Baseline

Per-centile	Oct	Nov	Dec	Jan	Feb	Mar	Pre-VAMP 4/1–4/15	VAMP 4/16–4/30	VAMP 5/1–5/15	Post-VAMP 5/16–5/31	Jun	Jul	Aug	Sep	taf/yr
Min	586	301	1,065	1,358	778	300	300	300	300	300	300	1,781	302	801	
10	1,141	1,188	2,599	2,890	1,994	1,182	320	320	700	700	333	2,740	1,859	1,532	
20	2,362	1,957	3,562	4,160	3,104	2,823	1,560	700	700	700	2,292	3,856	4,842	3,983	
30	3,083	2,666	4,125	4,625	3,867	3,555	2,749	700	700	1,799	3,038	4,111	6,102	4,884	
40	4,003	3,192	4,326	4,929	4,478	4,476	3,450	700	700	2,653	3,717	4,691	6,594	5,380	
50	4,624	4,234	5,131	6,354	5,686	6,135	4,172	700	700	3,033	3,973	5,768	6,680	5,946	
60	5,394	5,354	5,501	7,296	7,431	7,060	4,964	700	700	3,804	4,538	6,680	6,749	6,380	
70	6,464	6,357	6,713	7,405	8,171	7,254	5,640	1,125	1,125	4,416	5,302	7,180	7,026	6,550	
80	6,680	6,680	7,032	8,070	8,437	7,561	5,640	1,500	1,500	5,639	5,969	7,180	7,180	6,686	
90	6,680	6,680	7,157	8,500	8,500	7,561	5,697	1,500	1,500	5,640	6,680	7,180	7,180	7,180	
Max	6,680	6,680	7,678	8,500	8,500	7,561	5,697	1,500	1,500	5,687	6,680	7,180	7,180	7,180	
Avg	4,436	4,220	5,122	5,987	5,692	5,201	3,763	914	920	3,160	3,981	5,433	5,861	5,290	3,357

E. 2020 Scenario C

Per-centile	Oct	Nov	Dec	Jan	Feb	Mar	Pre-VAMP 4/1–4/15	VAMP 4/16–4/30	VAMP 5/1–5/15	Post-VAMP 5/16–5/31	Jun	Jul	Aug	Sep	taf/yr
Min	300	300	300	1,358	778	300	300	300	300	300	300	1,593	300	806	
10	1,148	1,096	2,585	3,061	1,963	1,174	700	700	700	700	749	3,163	976	1,596	
20	2,222	1,809	3,287	4,191	3,045	2,826	1,538	700	700	700	2,162	4,450	4,750	4,001	
30	3,289	2,633	3,970	4,812	3,809	3,527	2,749	700	700	1,799	3,107	4,843	6,418	4,697	
40	3,679	2,981	4,811	4,981	4,363	4,677	3,448	700	700	2,655	3,725	5,347	6,775	5,314	
50	4,488	3,927	5,341	6,320	6,319	6,168	4,172	700	700	3,031	3,975	6,176	7,302	5,846	
60	5,285	4,622	5,995	7,767	6,737	7,232	4,971	700	700	3,804	4,534	6,506	7,725	6,246	
70	6,103	5,368	6,322	8,500	8,500	7,561	5,640	1,125	1,125	4,416	5,305	7,326	8,064	6,669	
80	8,500	6,755	8,044	8,500	8,500	7,561	5,640	1,500	1,500	5,639	5,969	8,458	8,310	7,045	
90	8,500	8,500	8,500	8,500	8,500	7,561	5,697	1,500	1,500	5,640	6,680	8,500	8,390	8,500	
Max	8,500	8,500	8,500	8,500	8,500	7,561	5,697	1,500	1,500	5,687	6,680	8,500	8,500	8,500	
Avg	4,769	4,271	5,434	6,167	5,721	5,256	3,775	923	919	3,158	3,992	6,055	6,347	5,507	3,498

F. 2020 Scenario C Changes (~~D — E~~E – D)

Per-centile	Oct	Nov	Dec	Jan	Feb	Mar	Pre VAMP 4/1–4/15	VAMP 4/16–4/30	VAMP 5/1–5/15	Post VAMP 5/16–5/31	Jun	Jul	Aug	Sep	taf/yr
Min	-286	-1	-765	0	0	0	0	0	0	0	0	-188	-2	5	
10	7	-92	-14	171	-31	-8	380	380	0	0	416	423	-883	64	
20	-140	-148	-275	31	-59	3	-22	0	0	0	-130	594	-92	18	
30	206	-33	-155	187	-58	-28	0	0	0	0	69	732	316	-187	
40	-324	-211	485	52	-115	201	-2	0	0	2	8	656	181	-66	
50	-136	-307	210	-34	633	33	0	0	0	-2	2	408	622	-100	
60	-109	-732	494	471	-694	172	6	0	0	0	-4	-174	976	-134	
70	-361	-989	-391	1,095	329	307	0	0	0	0	3	146	1,038	119	
80	1,820	75	1,012	430	63	0	0	0	0	0	0	1,278	1,130	359	
90	1,820	1,820	1,343	0	0	0	0	0	0	0	0	1,320	1,210	1,320	
Max	1,820	1,820	822	0	0	0	0	0	0	0	0	1,320	1,320	1,320	
Avg	333	51	312	180	29	55	13	8	-1	-2	11	622	486	217	141